UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|---|---|---|---|
| 09/777,315 | 02/05/2001 | Albertus Van Zanten | 502-010097-US(PAR) | 3383 |

2512 7590 08/16/2004

PERMAN & GREEN
425 POST ROAD
FAIRFIELD, CT 06824

| EXAMINER | |
|---|---|
| PHAN, HANH | |

| ART UNIT | PAPER NUMBER |
|---|---|
| 2633 | // |

DATE MAILED: 08/16/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 09/777,315 | ZANTEN ET AL. | |
| | Examiner | Art Unit | |
| | Hanh Phan | 2633 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *05 February 2001*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1 and 11-19* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *11 and 16* is/are allowed.

6)☒ Claim(s) *1, 12-15 and 17-19* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

## DETAILED ACTION

1. This Office Action is responsive to the Amendment filed on 06/07/2004.

### *Claim Rejections - 35 USC § 103*

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1, 12-15 and 17-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jiang et al (US Patent No. 6,213,651) in view of Brimhall et al (US Patent No. 6,456,720).

Regarding claims 1 and 15, referring to Figure 1, Jiang discloses an electro-optical connector module (i.e., fiber optic module 100, Fig. 1) comprising a connection part (i.e., electrical element 104 and an optical block 102, Fig. 1), at least one optical transmitter circuit and/or optical receiver circuit (i.e., a transmit printed circuit board PCB 106 and a light transmitter 110, and a receive printed circuit board PCB 108 and light receiver 111, Fig. 1) and at least one electro-optical converter (i.e., light transmitter 110 and light receiver 111, Fig. 1) for respectively converting electrical signals into optical signals or vice versa; the module (i.e., fiber optic module 100) further comprises at least two substantially flat and substantially parallel electrically insulating sheets (i.e., transmit printed circuit board PCB 106 and receive printed circuit board PCB 108, Fig. 1) on

which the transmitter circuit and/or receiver circuit and the converter are mounted respectively (col. 3, lines 39-67 and col. 4, lines 1-55).

Jiang differs from claims 1 and 15 in that he does not specifically teach the circuit board is a foldable flexible circuit board comprising a first and a second sheets are connected to adjacent sides of a third sheet and the first, second, and third sheets being positioned in overlapping parallel relation by folding of a flexible sheet material linking the first and third sheets and the second and third sheets. However, referring to Figures 13-17, Brimhall teaches a foldable flexible circuit board comprising a first sheet and a second sheet are connected to adjacent sides of a third sheet and the first, second, and third sheets being positioned in relation by folding of a flexible sheet material linking the first and third sheets and the second and third sheets (see Figures 13-17, col. 10, lines 62-67, col. 11, lines 1-67 and col. 12, lines 1-45). Although Brimall does not specifically teach the first, second, and third sheets being positioned in overlapping parallel relation by folding of a flexible sheet material linking the first and third sheets and the second and third sheets. However, it is well known in the art that using a flexible circuit board and folding it in an organized pattern in order to obtain a multiplayer circuit board and allowing the components can be attached to the sheets with a maximum of space is available and form an integral whole and minimize the size of the device. Therefore, it would have been obvious to obtain the first, second, and third sheets being positioned in overlapping parallel relation by folding of a flexible sheet material linking the first and third sheets and the second and third sheets in order to provide a multiplayer circuit

board and allowing the components can be attached to the sheets with a maximum of space is available and form an integral whole and minimize the size of the device. Therefore, it would have been obvious to one having skill in the art at the time the invention was made to incorporate the first and second sheets are connected to adjacent sides of a third sheet, the first, second, and third sheets being positioned in overlapping parallel relation by folding of a flexible sheet material linking the first and third sheets and the second and third sheets as taught by Brimhall in the system of Jiang. One of ordinary in the art would have been motivated to do this since Brimhall suggests in column 10, lines 62-67, col. 11, lines 1-67 and col. 12, lines 1-45 that using such first and second sheets are connected to adjacent sides of a third sheet, the first, second, and third sheets being positioned in overlapping parallel relation by folding of a flexible sheet material linking the first and third sheets and the second and third sheets have advantage of allowing the components can be attached to the sheets with a maximum of space is available and form an integral whole and minimize the size of the device.

Regarding claims 12 and 17, Jiang further teaches the connection part is constructed for making electrical connections (col. 4, lines 5-55).

Regarding claims 13 and 18, Jiang teaches further comprising an optical connection part (i.e., optical block 102, Fig. 2, col. 4, lines 5-55).

Regarding claims 14 and 19, the combination of Jiang and Brimhall teaches the insulating sheets cooperate with a connection block to form a substantially rigid assembly (Figs. 1 and 2 of Jiang and Figs. 13-17 of Brimhall).

***Allowable Subject Matter***

4. Claims 11 and 16 are allowed.

***Response to Arguments***

5. Applicant's arguments filed 06/07/200 have been fully considered but they are not persuasive.

The applicant's arguments to claims 1, 12-15 and 17-19 are not persuasive. The independent claims 1 and 15 are now amended to include the limitation of "**at least a first set of first and second substantially flat and substantially parallel electrically insulating sheets on which the transmitter circuit and/or receiver circuit and the converter are mounted respectively and wherein said first and said second sheets are connected to adjacent sides of a third sheet and said first, second, and third sheets being positioned in overlapping parallel relation by folding of a flexible sheet material linking the first and third sheets and the second and third sheets**" and applicant argues that the cited references (Jiang et al. and Brimhall) fail to teach such limitation. The examiner respectfully disagrees. Referring to Figures 13-17, Brimhall et al. reference teaches a foldable flexible circuit board comprising a first sheet and a second sheet are connected to adjacent sides of a third sheet and the first, second, and third sheets being positioned in relation by folding of a flexible sheet material linking the first and third sheets and the second and third sheets (see Figures 13-17, col. 10, lines 62-67, col. 11, lines 1-67 and col. 12, lines 1-45). Although Brimall

does not specifically teach the first, second, and third sheets being positioned in overlapping parallel relation by folding of a flexible sheet material linking the first and third sheets and the second and third sheets. However, it is well known in the art that using a flexible circuit board and folding it in an organized pattern in order to obtain a multiplayer circuit board and allowing the components can be attached to the sheets with a maximum of space is available and form an integral whole and minimize the size of the device. Therefore, it would have been obvious to obtain the first, second, and third sheets being positioned in overlapping parallel relation by folding of a flexible sheet material linking the first and third sheets and the second and third sheets in order to provide a multiplayer circuit board and allowing the components can be attached to the sheets with a maximum of space is available and form an integral whole and minimize the size of the device.

Therefore, it is believed that the limitations of claims 1, 12-15 and 17-19 are still met by the combination of Jiang and Brimhall and the rejection is still maintained.

***Conclusion***

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the

shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hanh Phan whose telephone number is (703)306-5840.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan, can be reached on (703)305-4729. The fax phone number for the organization where this application or proceeding is assigned is (703)872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)305-4700.

Hanh Phan

Patent Examiner

08/11/2004